

nerviis infra pubescentibus. *Petiolus* pubescens, longe $\frac{1}{3}$ – $\frac{1}{2}$ laminae. *Flores* conspicui; corymbis compositis; pedicellis pubescentibus; staminibus 10 vel minus; antheris albis. *Fructus* autumnno maturans; mollis, dulcis, ruber vel puniceus, globosus (9^{mm}), levis non costatus, cum pilis raris; nucellis osseis, 2–3.—*Fig. 2.*

Hab. in Colorado, U. S. A.

This species is nearest to *C. occidentalis* Britt., but has much longer petioles, smaller, shiny leaves, not dull, somewhat smaller fruit, which is globose, not broader than long as in *C. occidentalis*. The tree is also less gnarled and there are no persistent bud-scales at flowering time.

Type specimen: *Ramaley* and *Dodds* 6184, Pole Canyon near Boulder, Colorado, Sept. 19, 1908. Type in University of Colorado Herbarium; cotype in Rocky Mountain Herbarium at Laramie, Wyoming.

The species grows in gulches in the lower foothills from 5500 to 7000^{ft} altitude; mostly about 6000^{ft}.

It may be of interest to students of *Crataegus* to point out that the fluting of the fruits, as in *C. Doddsii*, is a character which has apparently not been used by other observers. In alcoholic material and in well-dried specimens this character is very noticeable. Attention is called to the cross-section of the fruit shown in the drawing (*fig. 1*).—FRANCIS RAMALEY, *University of Colorado, Boulder, Colorado.*

SEXUAL CONDITION IN FEGATELLA

Until the last few years, nothing has been known in regard to the sexual differentiation in the sporophytic stage of dioecious bryophytes. In connection with a discussion of the germination of the zygotes of certain dioecious molds, the writer¹ first pointed out this lack of knowledge on the subject and raised the question whether a capsule of a dioecious bryophyte contains both male and female spores or spores of but a single sex. The question so far has been settled by the writer² for the single hepatic *Marchantia polymorpha*, and by the MARCHALS³ for the three mosses *Barbula unguiculata*, *Bryum argenteum*, and *Ceratodon purpureus*. In all these forms, as well as in the germinating mold *Phycomyces*, a single sporangium was found to contain both male and female spores as judged by the thalli they produced when sown in pure cultures.

The purpose of the present brief notice is to add the dioecious hepatic

¹ Zygosporangium germinations in the Mucorineae. *Annales Mycologici* 4:25. 1906.

² Differentiation of sex in thallus, gametophyte, and sporophyte. *BOT. GAZETTE* 42:161–178. 1906.

³ Recherches expérimentales sur la sexualité des spores chez les Mousses dioïques. *Mém. couronnés Cl. Sc. Ac. Roy. Belgique* 21:1–50. 1906.

Fegatella conica to the list of bryophytes already investigated, and to give increased weight to the opinion that the type of sexual differentiation in the forms so far studied is at least the predominant if not the universal type among the bryophytes.

April 22, 1906, *Fegatella* was found by the writer abundantly fruiting in the large pot holes in the Gletschergarten at Lucerne. The capsules for the most part were not yet opened. Two days later, in the Botanical Laboratory at Halle, unopened sporangia were carefully dissected out, and after a microscopic examination to make certain that no spores from other sporangia had adhered to their outer surfaces, they were preserved separately in small sterile paper envelopes. Spores from one of these single sporangia were sown May 10 in several Petri dishes in 0.1 per cent. Knop's solution. By June 19, the germinations from the spores had grown to sufficient size to be readily handled, and accordingly 128 from a single Petri-dish culture were transplanted to earth in regular rows in large shallow pots. They had reached a considerable size but were not sufficiently matured to produce their sexual organs when it became necessary in the latter part of July to leave them in the care of the *Diener* of the laboratory. The coming November a number of the plants were shipped to the writer packed in parchment paper with damp sphagnum moss. *Fegatella* does not multiply non-sexually by gemmae as does *Marchantia*, and there is practically no danger of infection in the earth cultures from thalli of the same species. Of the plants shipped, twelve survived the two weeks' journey and were sown in separate pots in the Harvard Botanic Gardens, where they have since been kept growing. Three of the cultures by the character of the sexual organs produced have shown themselves to be female and eight to be male. A single capsule of *Fegatella*, therefore, contains both male and female unisexual spores. The other cells of the sporophyte, undoubtedly, are hermaphroditic in character, although attempts to demonstrate this by regenerations from the stalk or wall of the sporangia were entire failures. One of the twelve pots, presumably with only the growth from a single spore, showed both antheridia and archegonia, but it was not possible to find that the lobes producing these different sexual organs were connected. It is possible that the differentiation of sex is not always complete in the capsule of *Fegatella*, and that hermaphroditic spores are in fact occasionally produced, as is the case in the mold *Phycomyces*; but it seems more likely that a fragment of a thallus of the other sex became accidentally mixed with the growth planted in this particular pot.—A. F. BLAKESLEE, *Connecticut Agricultural College, Storrs, Conn.*